

1 1. A surgical instrument system for use in surgical procedures, said surgical instrument
2 system including:

3 a guide assembly including an elongated portion having a central axis of rotation, and a
4 distal end that is positioned a radial distance away from the central axis;

5 a surgical tip assembly that may be attached to said guide assembly; and

6 a drive unit coupled to said guide assembly for rotating said guide assembly and thereby
7 rotating said surgical tip with respect to the central axis.

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1 2. The surgical system as claimed in claim 1, wherein said guide assembly includes a
2 guide tube that is curved at its distal end.

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1 3. The surgical system as claimed in claim 2, wherein said surgical tip assembly is at least
2 partially insertable into said guide tube.

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1 4. The surgical system as claimed in claim 1, wherein said surgical tip provides at least
2 three degrees of freedom.

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1 5. The surgical system as claimed in claim 1, wherein said guide assembly and said tip
2 assembly are coupled to a drive unit.

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1 6. The surgical system as claimed in claim 1, wherein said surgical tip assembly includes
2 an end effector having opposing grip portions.

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1 7. A surgical instrument system for use in surgical procedures, said surgical instrument
2 system including:

3 a guide assembly that may be positioned in a surgical environment, said guide assembly
4 including a proximal end and a distal end, and including a central opening along a longitudinal
5 length of said guide assembly, said guide assembly being adapted for insertion into a patient
6 and being adapted for rotation about a longitudinal axis of said guide assembly when inserted
7 into the patient;

8 an end effector that may be used in surgical procedures, and may be received by said
9 proximal end of said guide assembly, passed through said central opening, and to said distal
10 end of said guide assembly within a patient; and

11 a drive unit coupled to said surgical tip assembly for manipulating said surgical tip
12 assembly within the patient.

1 8. The surgical system as claimed in claim 7, wherein said drive unit is further coupled to
2 said guide assembly for rotating said guide assembly and thereby rotating said end effector
3 within the patient.

1 9. The surgical system as claimed in claim 7, wherein said guide assembly includes a
2 guide tube that is curved at its distal end.

1 10. The surgical system as claimed in claim 9, wherein said end effector is at least partially
2 insertable into said guide tube.

1 11. The surgical system as claimed in claim 7, wherein said end effector provides at least

2 three degrees of freedom of movement within the patient.

1 12. The surgical system as claimed in claim 11, wherein said end effector portion includes
2 two opposing gripper portions for use in surgical procedures.

1 13. The surgical system as claimed in claim 7, wherein said drive unit is coupled to a
2 computer processing unit, and wherein said drive unit is adapted to control the movement of
3 said end effector responsive to an automated procedure stored in said computer processing unit.

1 14. The surgical system as claimed in claim 7, wherein said drive unit is detachably coupled
2 to said end effector.

1 15. The surgical system as claimed in claim 7, wherein said drive unit is detachably coupled
2 to said guide assembly.

1 16. The surgical system as claimed in claim 7, wherein said drive unit is further coupled to
2 said guide assembly for rotating said guide assembly and thereby rotating said end effector
3 within the patient, and for sliding said guide assembly along a linear path with respect to the
4 surgical environment.

1 17. A surgical instrument for use in surgical procedures, said surgical instrument
2 comprising:
3 a distal end that is adapted to be inserted into a patient during surgery;
4 a proximal end that is adapted to remain outside of the patient during surgery;

5 a plurality of link members coupled to one another via a plurality of joints that are
6 interposed between adjacent link members, some of said link members being located at the
7 distal end of the instrument, said instrument providing at least five degrees of freedom of
8 movement of said distal portion of said instrument inside of the patient; and

9 drive means for effecting movement of said plurality of said link members about said
10 plurality of joints.

1 18. A surgical instrument for use in surgical procedures, said surgical instrument
2 comprising:

3 a guide assembly including a proximal end and a distal end that is adapted to be inserted
4 into a patient, said guide assembly being adapted to rotate with respect to a longitudinal axis
5 thereof;

6 an end effector for use during surgical procedures, said end effector being separable
7 from and insertable into a patient through said guide assembly; and

8 actuation means for effecting movement of said end effector.

1 19. A surgical instrument as claimed in claim 18, wherein said end effector provides at least
2 three degrees of freedom of movement.

1 20. A surgical instrument as claimed in claim 18, wherein said end effector provides at least
2 four degrees of freedom of movement.

1 21. A surgical instrument for use in surgical procedures, said surgical instrument including
2 a proximal end and a distal end and comprising:

3 an end effector at the distal end of said surgical instrument, said end effector for use
4 within a patient's body during surgical procedures;
5 a flexible intermediate portion extending from said distal end to said proximal end; and
6 a coupling assembly at the proximal end for securing said surgical instrument to an
7 actuation unit within a surgical environment.

1 22. A method of manipulating a surgical instrument, said method comprising the steps of:
2 inserting a distal portion of a surgical guide assembly into a patient;
3 removably securing the surgical guide assembly in a surgical environment;
4 inserting a surgical tip assembly through the guide assembly; and
5 actuating a drive unit to effect the manipulating the position of the surgical tip assembly
6 within the patient.

1 23. The method as claimed in claim 22, wherein said method further includes the step of
2 receiving input signals from a user, and said step of manipulating the position of the surgical
3 tip assembly is responsive to the input signals.

1 24. The method as claimed in claim 22, wherein said method further includes the step of
2 manipulating the position of the guide assembly.

1 25. The method as claimed in claim 22, wherein said surgical instrument tip provides at
2 least three degrees of freedom.